Iowa Department of Transportation

MINUTES OF SPECIFICATION COMMITTEE MEETING

September 5, 2002

Members Present:	John Adam, Director	Statewide Operations Bureau
	Tom Reis, Chair	Specifications Section
	Roger Bierbaum	Contracts
	Jim Berger	Office of Materials
	Larry Jesse	Office of Local Systems
	Bruce Kuehl	District 6-Dist. Const. Engineer
	Keith Norris	District 2-Dist. Materials Engineer
	Gary Novey	Office of Bridges and Structures
Members Not Present:	Steve Gent	Office of Traffic and Safety
	Mike Kennerly	Office of Design
	Doug McDonald	District 1-Resident Const. Engineer
	John Smythe	Office of Construction
From FHWA:	Max Grogg	
Others Present:	Donna Buchwald, Secretary	Specifications Section
	Steve Akes	Warren County
	Dave Berryhill	Office of Design
	Mark Bortle	Office of Construction
	Tim Crouch	Office of Traffic and Safety
	Tom Jacobson	Office of Construction
	Kevin Jones	Office of Materials
	Sam Moussilli	Office of Materials

Tom Reis, the Specifications Engineer, opened the meeting. The following items were discussed in accordance with the September 4, 2002, agenda revision:

1. CAST Update

No changes from previous meeting.

2. Section 2103, Fuel Adjustment

The Office of Contracts requests several changes to Section 2103 that will increase the threshold for when fuel adjustment provisions apply from 5% to 50% and allow the fuel adjustment provisions to be made optional by the Contractor.

Submitted by: Roger E. Bierbaum	**Office: Contracts**	
Submittal Date: August 5, 2002	**Proposed Effective Date:** April 2003	
Article No.: 2103.04 and 2103.05	**SS No.:**	**Other:**

Change (Redline/Strikeout):

2103.04. METHOD OF MEASUREMENT.

The Engineer will estimate the quantity of work done in cubic yards (cubic meters) for each of the items of work included by this specification for the month covered by each CPI; this may be done more frequently in the case of semi-monthly payments. The Engineer will document and may check each quantity estimate and the basis on which the estimate was made. If the contract quantity for an item is in tons (megagrams), the Engineer will convert the quantity to cubic yards (cubic meters) using an appropriate conversion factor. The total quantity cubic yards (cubic meters) for each month (Y) will be the sum of these quantities. The Engineer will confer with the Contractor's representative to reach agreement on this quantity; however, the Engineer's estimate, after conferring, will be the quantity subject to adjusted payment for that period.

If the work is not completed within the contract period or authorized extensions thereof, the CPI to be used for work done after the contract period shall be the CPI that applied during the last working day within the contract period, including authorized extensions.

A. The Engineer will compute the Gross Fuel Adjustment (GFA) for all items of work covered in this specification other than Embankment-In-Place (dredge material) using the following formula:

GFA = 0.25 (CPI-BPI)Y

Note: The GFA may be positive or negative.

The Engineer will compute the first ~~5%~~ ~~5%~~50% of adjustment (FFA) for all items of work covered by this specification other than Embankment-In-Place (dredge material) using the following formula:

FFA = 0.25 (~~0.05~~ ~~0.05~~0.50 BPI)Y

B. The Engineer will compute the Gross Fuel Adjustment for Embankment-In-Place (dredge material) (GFA_{Dredge}) using the following formula.

GFA_{Dredge} = (CPI-BPI)* (Billed gallons (liters) of fuel used per month)

Note: The GFA_{Dredge} may be positive or negative.

The Engineer will compute the first ~~5%~~ ~~5%~~50% of adjustment for Embankment In Place (dredge material) (FFA_{Dredge}) using the following formula:

FFA_{Dredge} = ~~0.05~~ ~~0.05~~0.50 BPI * (Billed gallons (liters) of fuel used per month)

If the FFA is equal to or greater than the GFA, the Net Fuel Adjustment will be zero, and no fuel adjustment payment will be made. The same applies to FFA_{Dredge} and GFA_{Dredge}.

If the positive or negative GFA is numerically greater than the FFA, the Net Fuel Adjustment will be determined as the GFA-FFA. The same applies to GFA_{Dredge} and FFA_{Dredge}.

2103.05. BASIS OF PAYMENT.

Unless the ~~The~~ The Contractor waives the Fuel Adjustment clause as allowed in the bidding documents, the Contractor will be paid the Net Fuel Adjustment for each month, subject to the deduction for partial payments described in Article 1109.05. Should the Net Fuel Adjustment be negative, an equal amount will be deducted on payments made to the Contractor from sums otherwise due. This payment or deduction will be made by change order.

On completion of the work of the contract, for all items covered in this specification other than Embankment-In-Place (dredge material) the sum of the total quantities (Y) for each monthly period will be adjusted, if necessary, to agree with the final quantities to be paid. On completion of the work of the contract for Embankment-In-Place (dredge material), the sum of the total quantities for billed gallons (liters) of fuel used for each monthly period will be adjusted, if necessary, to agree with the final quantities to be paid. This adjustment will be made by either subtracting the proper quantity from the last adjustment made; or adding the proper quantity and computing the adjustment on the basis of the CPI in effect on the last working day any of this work was done.

On completion of the work of the contract, the monthly fuel adjustment will be revised by pro-rating any variance from the plan quantity.

This payment or deduction shall be full compensation for all fluctuations in fuel prices during the time the contract work is being done.

Reason for Revision: Request passed by AGC Grading Division at their January 16, 2002 Meeting to make:

1. Increase threashold from 5% to 50% before fuel adjustment applies
2. Make the fuel adjustment provision optional by the contractor

County or City Input Needed (X one)	**Yes**	**No**
Comments:		

Industry Input Needed (X one)			**Yes**	**No** X	
Industry notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments:					

SPECIFICATION SECTION USE ONLY

Specification Section Recommended Language:

2103.04, A

Replace "5%" with "50%" in the second sentence.
Replace "0.05" with "0.50" in the second.

2103.04, B

Replace "5%" with "50%" in the second sentence.
Replace "0.05" with "0.50" in the second.

2103.05, Basis of Payment

Replace the first sentence:

Unless the ~~The~~ Contractor waives the Fuel Adjustment clause as allowed in the bidding documents, the Contractor will be paid the Net Fuel Adjustment for each month, subject to the deduction for partial payments described in Article 1109.05.

Comments:

SPECIFICATION COMMITTEE ACTION

Final Approved Text:

2103.04, A

Replace "5%" with "50%" in the second sentence.
Replace "0.05" with "0.50" in the second.

2103.04, B

Replace "5%" with "50%" in the second sentence.
Replace "0.05" with "0.50" in the second.

Comments: The AGC's Board of Directors requested these changes on earth work only, not any other areas of work.

The Committee recommended that the changes to Article 2103.05 not be made. This change would not be in the best interest of the Department.

Deferred:	**Not Approved:** 2103.05	**Approved - Date:** 9-5-02 (2103.04, A and B)	**Effective - Date:** 4-15-03

2A. Section 2316, Pavement Smoothness

The Office of Materials is recommending a total rewrite of Section 2316 that will incorporate the zero blanking band and wheel path testing into pavement smoothness testing.

Submitted by: Kevin Jones **Office:** Materials **Date:** 8/22/02

Proposed Effective Date: Oct 2003 or beyond

Article No.: 2316, Pavement Smoothness **SS No.:** **Other:**

Change (Redline/Strikeout): Total Rewrite. Attached

Reason for revision: The District Construction Engineers and District Materials Engineers suggested the need for a rewrite of 2316 and the consideration of a zero blanking band and wheel path testing. The main issue is a few rough riding pavements that achieve low profile index values and achieve incentive. A group of DOT staff (Charlie Potter, Tony Yanak, Kent Ellis, Chris Brakke, and Kevin Jones) was assembled to draft a rewrite. Groups of industry representatives were invited to provide input and to help improve the draft.

No industry input needed ☐ **Industry notified** X **Industry Concurrence** ☐

Industry Comments: Attached

Specification Section Use Only:

Specification Section Recommended Language: No changes from submittal.

Specification Section Comments: The Specifications Section has worked with the Office of Materials in the development of the proposed changes.

Final Approved Text:

Comments: The Office of Materials has been collecting data from zero blanking band and wheel path testing; but rather than wait for all the data to be collected and analyzed, it was suggested that the specification be revised, and that the incentives/disincentives levels and grinding levels requirements be determined and inserted when the data is analyzed. Several PCC and HMA contractors are collecting this data for the Department.

The 0.2 inch blanking band was invented before computers. The results within the 0.2 inch range were impossible to analyze without computers.

The recommended changes to the specifications will not necessarily increase or decrease the incentive pay. These changes will be a better representative of smoothness where vehicles actually travel. It will also not allow incentive payment on a rough riding pavement, which has happened.

The incentives/disincentives in the attached draft document are from the Kansas Department of Transportation. These Kansas incentives/disincentives have been changed several times over the last few years and are now very restrictive. The Iowa DOT will start with less restrictive numbers.

The current recommendation is only for Section 2316 to cover pavements only. Depending on the success of these changes, Section 2317 may also be changed in the future.

The Specification Committee discussed tiered specifications on Interstate and Primary Roads with relation to depth of pavement. It was decided that the draft specification is the fairest method to all parties involved, including the Department.

It was recommended that a tiered specification be developed for counties. Due to local systems geometrics and budgets, the recommended levels in the attached draft specification may not be attainable. A tiered specification would help add consistency for local systems projects throughout the state.

The Specification Committee asked the County Engineer's Specification Committee review the draft specification and provide input and suggestions for a tiered specification.

The Office of Materials is planning to submit the Specification Committee's recommended draft to the industry in late October 2002 for discussion at their December 2002 joint meeting.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 10-21-03, optimistic. Must get concurrence from industry on incentives/disincentives scale before implementation. May use as a Developmental Specification on a few project in next year's construction season.

SHADED TEXT INDICATES NUMBERS THAT ARE YET TO BE DETERMINED.

2316. Pavement Smoothness

REPLACE THE ENTIRE SECTION.

2316.01 GENERAL.
Pavement smoothness shall be evaluated for all Interstate and Primary main line pavement surfaces, and all other road surfaces included on Primary projects, except when specifically excluded by the contract documents. Pavement smoothness shall not be evaluated for all other roads unless specified in the contract documents. Main line pavement is defined as all permanent pavement for traffic lanes, including tapers to parallel lanes or through lanes at intersections, tapers to climbing lanes, and tapers to ramps and loops. Pavement smoothness shall also be evaluated for all interchange ramps and loops, side roads, auxiliary lanes, and bridge approaches. Exclusions from profilograph testing are shoulders, crossovers, and individual sections of pavement less than 50 feet (15 m) in length.

If this specification is required by contract documents on non-Primary projects let by the Department, it will be added in its entirety. Selected portions of the specification will not be deleted.

The Contractor shall determine the pavement smoothness according to Materials I.M. 341 using a 10 foot (3 m) straightedge or rolling straightedge on surfaces excluded from profilograph testing. The Engineer will select the locations to be tested on surfaces excluded from profilograph testing. The variation of the surface from the testing edge of the straightedge shall not exceed 1/8 inch (3 mm) between any two contacts, longitudinal or transverse. The Contractor shall correct all irregularities exceeding the specified tolerance using equipment and methods approved by the Engineer. After the Contractor has corrected an irregularity, the Engineer may perform monitor testing of the area to verify compliance with the specified tolerance.

2316.02 EQUIPMENT.
The Contractor shall provide and operate a California type profilograph to determine the pavement profile in accordance with Materials I.M. 341. Other types of profilographs or profilers that produce compatible results and meet the requirements of Materials I.M. 341 may be used. The Contractor's operator shall be trained and certified to operate the profilograph as required by the Contracting Authority.

If the Contractor' s profilograph has a mechanical recorder, the Contractor shall provide automated trace reduction equipment in accordance with Materials I.M. 341. If the Contractor's profilograph has a computerized recorder, the trace produced will be evaluated without further reduction.

2316.03 SURFACE TOLERANCES, TESTING, AND EVALUATION.
A pavement section is defined as a continuous area of finished pavement 0.1 mile (160 m) in length and one lane (10 to 12 foot (3.0 to 3.7 m) nominal) in width. A partial section resulting from an interruption of the continuous pavement surface (i.e. bridge approaches, side road tie-ins, the cessation of the daily paving operations, etc.) is subject to the same evaluation as a whole section.

A. Tolerances.
The Contractor shall produce pavement with an average profile index of 30.0 inches per mile (470 mm/km) or less per 0.1 mile (160 m) section (45.0 inches per mile (710 mm/km) or less on roadways with a posted speed of 45 mph or less). Pavement with initial profiles that exceed 30.0 inches per mile (470 mm/km) per 0.1 mile (160 m) section (45.0 inches per mile (710 mm/km) on roadways with a posted speed of 45 mph or less) may be accepted after corrective measures by the Contractor have been completed.

B. Testing.
The Contractor shall determine the pavement profiles for each lane according to the procedures for one lane, as shown in Materials I.M. 341. Additional profiles may be taken only to define the limits of an out-of-tolerance surface variation. The Engineer may use a 10 foot (3 m) straightedge (or other means) to detect irregularities outside the required trace paths. The Engineer may also use the straightedge to delineate the areas that require corrective action.

C. Evaluation.
The Contractor shall determine a profile index based on the 0 inch (0 mm) blanking band according to Materials I.M. 341 for each section of finished pavement surface except for:

1. Side roads connections less than 600 feet (180 m) in length.
2. Bridge approaches less than 50 feet (150 m).
3. Storage lanes, turn lanes, and other auxiliary lanes less than 600 feet (180 m).
4. Pavement less than 8.5 feet (2.6 m) in width.
5. The 15 feet (4.5 m) at the ends of the section when the Contractor is not responsible for the adjoining surface.
6. On HMA pavements, single lift pavement overlays 2 inches (50 mm) or less in thickness.

For the following situations, the profile index will be evaluated. If the profile index exceeds 30.0 inches per mile (470 mm/km) per 0.1 mile section (45.0 inches per mile (710 mm/km) on roadways with a posted speed of 45 mph or less), the Contractor may elect to eliminate that area from profile index for the day's paving operation and evaluate the area using a 10 foot (3 m) straigtedge as outlined in Article 2316.01.

1. Horizontal curves with a centerline radius of less than 1000 feet (300 m) and the pavement within the superelevation transition of such curves.
2. Crest and sag vertical curves with a L/A< 100 (L is the length of curve in feet and A is the grade change in percent)(L/A<30.5, L is the length in meters and A is the grade change in percent).

The Contractor shall determine a daily average profile index for each day's paving operation. A day's paving operation is defined as a minimum of 0.1 mile (160 m) section of pavement placed in a day. If less than 0.1 mile (160 m) section is paved, the day's production will be grouped with the next day's production. If the production of the last day of project paving is less than 0.1 mile (160 m) section, it will be grouped with the previous day's production.

During the first 3 days of the paving operation, and after long shut-down periods, the pavement shall be tested and the test report furnished to the Engineer and District Materials Engineer by the end of the next day worked following the placement. On HMA pavement, the testing shall be performed as soon as the pavement has cooled sufficiently to permit testing. The Engineer and the Contractor will use the results of the initial testing to evaluate the paving methods and equipment. If the initial paving operation produces acceptable results, the Contractor may continue paving.

If the day's average profile index exceeds 40.0 inches per mile (630 mm/km) (65.0 inches per mile (1025 mm/km) on roadways with posted speeds of 45 mph or less), the paving operation will be suspended until corrective action is taken by the Contractor. When the paving is resumed, the paving operations will be evaluated with the start-up testing procedures in the preceding paragraph.

The Contractor shall make the profilogram and evaluation available to the Engineer and District Materials Engineer during the project and furnish both at the end of the project. The evaluation of the trace shall be performed according to Materials I.M. 341. The test report shall be furnished to the Engineer within 2 working days after placement of the pavement and again within 2 working days after any corrections are made.

2316.04 CORRECTIVE ACTIONS.
The pavement will be evaluated in 0.1 mile (160 m) sections using the profilograph, to determine pavement sections where corrective work or pay adjustments will be necessary. Each individual profilograph trace will be evaluated (not the average of multiple traces) to determine the areas where corrective action is needed.

Within each 0.1 mile (160 m) section, all areas representing high points (bumps) or low points (dips) with deviations in excess of 0.3 inches (7 mm) in a length of 25 feet (7.6 m) or less shall be corrected by the Contractor regardless of the profile index value. Pavement sections excluded from profile index evaluation in Article 2316.03 shall be evaluated for high points and low points with deviations in excess of 0.3 inches (7 mm) in a length of 25 feet (7.6 m) or less and shall be corrected by the Contractor.

A. For roadways with a posted speed greater than 45 mph:
Any 0.1 mile (160 m) section, including bumps, having an initial profile index between 30.1 and 40.0 inches per mile (470.1 and 630 mm/km) shall be corrected to reduce the profile index to 25.0 inches per mile (395 mm/km) or less on each trace. Any 0.1 mile (160 m) section, including bumps, having an initial profile index of 40.1 inches per mile (630.1 mm/km) or greater shall be corrected to reduce the profile index to 25.0 inches per mile (395 mm/km) or less on each trace, or replaced at the Contractor's option. On sections where corrections are made, the Contractor shall test the pavement to verify that corrections have produced a profile index of 25.0 inches per mile (395 mm/km) or less for each trace.

B. For roadways with a posted speed of 45 mph or less, ramps from the nose to the intersection of the adjoining roadway, acceleration and deceleration lanes including the taper, and/or acceleration lanes that become a through lane are limited to 500 feet (150 m) from the nose:
Any 0.1 mile (160 m) section, including bumps, having an initial profile index between 45.1 and 65.0 inches per mile (710.1 and 1025 mm/km) shall be corrected to reduce the profile index to 45.0 inches per mile (710 mm/km) or less on each trace. Any 0.1 mile (160 m) section, including bumps, having an initial profile index of 65.1 inches per mile (1025.1 mm/km) or greater shall be corrected to reduce the profile index to 45.0 inches per mile (710 mm/km) or less on each trace, or replaced at the Contractor's option. On sections where corrections are made, the pavement will be tested by the Contractor to verify that corrections have produced a profile index of 45.0 inches per mile (710 mm/km) or less for each trace.

C. Corrective work shall be at the Contractor's expense except for the 15 feet (4.5 m) at the end of the section when the Contractor is not responsible for the adjoining surface. Corrective work shall be completed prior to determining pavement thickness.

Bush hammers or other impact devices will not be permitted.

1. PCC Pavement.
On PCC pavement, corrections shall be made using an approved profiling device or by removing and replacing the pavement. The corrective methods used by the Contractor shall be applied to the full lane width. When completed, the corrected area (full lane width) shall have uniform texture and appearance, with the beginning and ending of the corrected area squared normal to centerline of the paved surface. Where surface corrections are made, transverse grooving will not be required.

The Contractor shall repair or replace any curing membrane or protective cover that is damaged or removed during the testing.

2. HMA Pavement.
On HMA pavement, corrections shall be made by diamond grinding, by overlaying the area, by replacing the area, or by inlaying the area. If the surface is corrected by diamond grinding, the work and equipment shall be the same as specified for PCC pavement except that in lieu of grooving, the ground surface shall be covered with a seal coat as described in Article 2303.03, A, 2, for a runout.

If the surface is corrected by overlay, replacement, or inlay, the surface correction shall begin and end with a transverse saw cut normal to the pavement lane lines or edge lines within any one area. The profile of the surface must be smooth with no bumps or dips at beginning or end or correction.

Overlay correction must be for the entire pavement width. Pavement cross slope must be maintained through the corrected areas.

D. The Engineer may perform profilograph testing on the surface for monitoring and comparison purposes. The Engineer may test the entire project length if it is determine that the Contractor certified test results are inaccurate, and the Contractor will be charged for this work at a rate of $400.00 per mile ($250.00 per kilometer), per profile track, with a minimum charge of $800.00. Furnishing inaccurate tests may result in decertification of the Contractor's certified operator.

On lanes over 8.5 feet (2.6 m) in width, for through traffic which requires matching the surface of the new pavement to the surface of an existing pavement, an Average Base Index (ABI) will be calculated as shown in Materials I.M. 341; this will be the smoothness base in inches per mile (millimeters per kilometer) for payment for the new pavement unless otherwise specified. The schedule for adjusted payment for the ABI is in Article 2316.05. Should the surface of the existing pavement be specified for correction, smoothness testing for ABI calculation shall be done after correction.

2316.05 PAY ADJUSTMENTS.
Pay adjustments will be based on the initial average profile index determined for the sections prior to performing any corrective work. Areas excluded from the profilograph testing will not be subject to price adjustments.

If the Contractor elects to remove and replace the sections, the Contractor will be paid the price adjustment that corresponds to the initial average profile index obtained on the pavement sections after replacement.

When the plans dictate that an area of pavement is to be hand finished, the area will not be subject to reduced payment. However, the area is to be profiled and corrected as necessary to meet these specifications.

A. PCC Pavement.
If the initial average profile index is 18.0 inches per mile (285 mm/km) or less per 0.1 mile (160 m)

section (25.0 inches per mile (395 mm/km) on roadways with a posted speed of 45 mph or less & ramps), the payment will be adjusted as shown in the table below.

SCHEDULE FOR ADJUSTMENT PAYMENT
FOR PCC PAVEMENTS

Profile Index Greater than 45 mph	Profile Index Ramps and 45 mph or less	Contract Price Adjustment
inches per mile (mm/m)	inches per mile (mm/m)	Dollars per section
6.0 or less (95.0 or less)		+1200.00
6.1 to 10.0 (95.1 to 160.0)	15.0 or less (235.0 or less)	+1000.00
10.1 to 15.0 (160.1 to 235.0)		+750.00
	15.1 to 25.0 (235.1 to 395.0)	+500.00
15.1 to 18.0 (235.1 to 285.0)		+370.00
18.1 to 30.0 (285.1 to 470.0)	25.1 to 45.0 (395.1 to 710.0)	0.00
30.1 to 40.0 (470.1 to 630.0)	45.1 to 65.0 (710.1 to 1025.0)	0.00*
40.1 or more (630.1 or more)	65.1 or more (1025.1 or more)	-750.00*

* These sections must be corrected to 25.0 inches per mile (395 mm/km) (45.0 inches per mile (710 mm/km) for 45 mph or less & ramps)

B. HMA Pavement.
If the initial average profile index is 10.0 inches per mile (160 mm/km) or less per 0.1 mile (160 m) section (15.0 inches per mile (235 mm/km) on roadways with a posted speed of 45 mph or less & ramps), the payment will be adjusted as shown in the table below.

SCHEDULE FOR ADJUSTMENT PAYMENT
FOR HMA PAVEMENTS

Profile Index Greater than 45 mph	Profile Index Ramps and 45 mph or less	Contract Price Adjustment
inches per mile (mm/m)	inches per mile (mm/m)	Dollars per section
7.0 or less (110.0 or less)		+152.00
7.1 to 10.0 (110.1 to 160.0)	15.0 or less (235.0 or less)	+76.00
10.1 to 30.0 (160.1 to 470.0)	15.1 to 45.0 (235.1 to 710.0)	0.00
30.1 to 40.0 (470.1 to 630.0)	45.1 to 65.0 (710.1 to 1025.0)	0.00*
40.1 or more (630.1 or more)	65.1 or more (1025.1 or more)	-203.00*

* These sections must be corrected to 25.0 inches per mile (395 mm/km) (45.0 inches per mile (710 mm/km) for 45 mph or less & ramps)

C. Pavements using ABI.

SCHEDULE FOR ADJUSTMENT PAYMENT
FOR PAVEMENTS USING ABI

Profile Index Greater than 45 mph	Profile Index Ramps and 45 mph or less	Contract Price Adjustment
inches per mile (mm/km)	inches per mile (mm/km)	Dollars per section
0 to ABI	0 to ABI	0.00
ABI +0.1 to ABI +?.0	ABI +0.1 to ABI +?.0	-300.00
ABI +?.1 to ABI +?.0	ABI +?.1 to ABI +?.0	-500.00
ABI +?.1 to ABI +?.0	ABI +?.1 to ABI +?.0	-800.00

3. Article 2405.09, Setting Anchor Bolts for Bridge Bearings

The Office of Materials requests a change to Article 2405.09 that will clarify the intent of the specifications for anchor bolts.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2405.09 Setting Anchor Bolts for Bridge Bearings **SS No.:** **Other:**

Change (Redline/Strikeout):
Add/replace the 3rd sentence with the following:

Anchor bolts shall meet the requirements of ASTM F-1554 Grade 36.

Remove wording from the 3rd sentence "full body diameter"

Reason for revision: The first change provides for consistency throughout the specification and is in accordance with Road/Bridge Standards and I.M.s.

ASTM F-1554 allows the thread to be either cut or rolled and states no minimum diameter requirement. By specifying that anchor bolts shall have a "full body diameter" means the threads will be cut and not rolled.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐
Industry Comments:

Specification Section Use Only:
Specification Section Recommended Language:

Replace the third sentence of the first paragraph.

Anchor bolts shall meet the requirements of ASTM ~~A 307~~ F 1554, Grade ~~C~~ 36, and be full-length galvanized~~, and have a full-body diameter~~.

Specification Section Comments:

Final Approved Text:

Replace the third sentence of the first paragraph.

Anchor bolts shall meet the requirements of ASTM ~~A 307~~ F 1554, Grade ~~C~~ 36, and be full-length galvanized~~, and have a full-body diameter~~.

Replace the word "green" with "blue" in the fifth sentence of the first paragraph in the existing GS entry.

Comments: Removing the statement "and have a full-body diameter" will allow either cutting or rolling of the bolts.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

4. Article 2408.01, Description

The Office of Materials requests a change to Article 2408.01 that will assure that only state certified steel fabrication shops and plants are pre-approved and are on the approved list of fabricators before they can bid or do steel fabrication work for the State of Iowa.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.01 Description **SS No.:** **Other:**

Change (Redline/Strikeout):
Add/replace the following:

The provisions of this section shall apply to fabrication and erection of all types of bridge structures in which the main members spanning the various supports are composed of steel and of other structures or parts of structures where the design or intended use of steel is based on physical or chemical properties of the steel. Unless modified elsewhere in the contract documents, all fabrication to which this section applies shall be done in the states, territories, and possessions of the United States and in other locations within the geographic limits of North America and only in ~~qualified~~ certified steel fabrication shops and plants that are ~~approved~~ pre-approved as per Materials IM 557. In addition, all fabrication shops and plants shall be on an approved list before being allowed to bid on, or do fabrication work covered by Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction. All main member fabrication, except bearing devices, shall be fabricated by plants certified as Category III, Major Steel Bridges, under the provisions of AISC's Quality Certification Program. The steel superstructure will be placed on a substructure constructed as provided in Section 2405. The requirements of Sections 2403, 2404, 2410, 2412, 2413, and 2508 shall apply to the various types of construction. The various types of structures shall be built in conformance with the contract documents.

Reason for revision: The reason for the change is to assure that only state certified steel fabrication shops and plants are pre-approved and are on the approved list of fabricators before they can bid or do steel fabrication work for the State of Iowa.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐
Industry Comments:

Specification Section Use Only:
Specification Section Recommended Language:

Replace the second sentence:

Unless modified elsewhere in the contract documents, all fabrication to which this section applies shall be done in the states, territories, and possessions of the United States and in other locations within the geographic limits of North America and only in ~~qualified~~ certified steel fabrication shops and plants that are pre-approved as per Materials I.M. 557.

Add a new third sentence:

In addition, all fabrication shops and plants shall be on the pre-approved list before being allowed to bid on, or perform fabrication work in accordance with the contract documents.

Specification Section Comments:

Final Approved Text:

Replace the second sentence:

Unless modified elsewhere in the contract documents, all fabrication to which this section applies shall be done in the states, territories, and possessions of the United States and in other locations within the geographic limits of North America and only in ~~qualified~~ AISC or Iowa DOT certified steel fabrication shops and plants that are pre-approved as per Materials I.M. 557.

Add a new third sentence:

In addition, all fabrication shops and plants shall be pre-approved by the project letting date before being allowed to quote and perform fabrication work in accordance with the contract documents.

Comments: The steel fabrication shop must be certified by the Department or AISC**.**

The Specification Committee had concerns about notifying contractors that fabricators are approved if the fabricator is added after that Materials I.M.s are printed semi-annually. It was suggested that a current list of approved suppliers be on the Office of Materials website. This was deemed unfair to those contractors without access to the internet.

Specification Committee Action:

Deferred: X **Not Approved: ☐** **Approved Date** **Effective Date**

The Specification Committee approved this item for the April 15, 2003, General Supplemental Specification with the condition that several wording changes were made and approved by the Offices of Bridges and Structures, Construction, Contracts, and Materials. As of the printing date of these minutes, this issue has not been resolved; therefore, the Specifications Engineer has deferred this item. Also, a location for the approved list of shops and plants has not been determined.

5. Article 2408.09, Bars and Plates

The Office of Materials requests a change to Article 2408.09 that will make sure that all sharp corners of sheared plates are dulled by grinding whether or not they are going to be painted.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.09 Bars and Plates **SS No.:** **Other:**

Change (Redline/Strikeout):
Replace the second sentence of the second paragraph with the following:

If sheared plates are used, their exposed sharp corners shall be dulled by grinding.

Reason for revision: The reason for the change is to make sure that all sharp corners of sheared plates are dulled by grinding whether or not they are going to be painted.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Delete "to hold paint" from the second sentence of the second paragraph.

Specification Section Comments:

Final Approved Text: No change from the Specification Section Recommended Language.

Comments: The Specification Committee agreed that "dulled" would be a corner that is no longer sharp in the inspector's judgment. Including a radius would require the inspector to accurately measure the round over.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

6. Article 2408.13, Section 1,1.3 Welding Processes

The Office of Materials requests a change to Article 2408.13 that will clarify the intent of the specifications concerning welding.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.13 Section 1,1.3 Welding Processes **SS No.:** **Other:**

Change (Redline/Strikeout):
Add the following new paragraph 1.3.1.2 after the existing 1.3.1.1.
1.3.1.2 The WPS shall be posted and initialed by welders at the welder's workstation at all times during welding operations.

Reason for revision: This is one of the AWS code requirements. The WPS need to be posted and be initiated by the welder who intends to do the welding. Welding must be done in accordance with an approved or pre-approved WPS.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Add as new paragraph 1.3.1.2
1.3.1.2 The WPS shall be posted and initialed by welders at the welder's workstation at all times during welding operations.

Specification Section Comments:

Final Approved Text: No change from the Specification Section Recommended Language.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

7. Article No.: 2408.13, Section 5, Part B, 5.21.4, Period of Effectiveness

The Office of Materials requests a change to Article 2408.13 that align the specifications with the AWS Code.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.13, Section 5, Part B, 5.21.4 Period of Effectiveness **SS No.:** **Other:**

Change (Redline/Strikeout):

Replace Paragraph 5.21.4 with the following:

> Shop welder's, welding operator's, or tack welder's qualification herein specified shall be considered as remaining in effect from the end of the month in which the tests were taken, for a period of one year. The qualification for the above may be extended annually, based on a letter from the fabricator/contractor certifying that they have been engaged in the process(es) for which they **are** qualified without interruption of more than six months during the preceding twelve months, or by requalification. The field welder's qualification herein specified will be considered as remaining in effect from the end of the month in which the test was taken, for a period of one year. For field welders who have successfully passed their qualification tests without failure for three consecutive years, requalification will only be required every two years. Requalification may be required at any time there is a specific reason to question a welder's ability to make sound welds.

Reason for revision: The reason for the change is to have our requirements parallel the requirements of the AWS Code.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐
Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

2408.13, Section 5, Part B, 5.21.4 Period of Effectiveness

Replace the first sentence:
~~The~~ Shop welder's, welding operator's, or tack welders qualification herein specified shall be considered as remaining in effect from the end of the month in which the tests were taken, for a period of 1 year.

Delete the third sentence:
~~In all cases, requalification will be required every 5 years.~~

Specification Section Comments:

Final Approved Text: No change from the Specification Section Recommended Language.

Comments: The removal of the five year requirement is being implemented in all states.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

8. Article No.: 2408.13, Section 5, Part B, 5.21, General Requirements

The Office of Materials requests a change to Article 2408.13 that eliminate duplication in the specifications.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.13, Section 5, Part B, 5.21 General Requirements **SS No.:** **Other:**

Change (Redline/Strikeout):
Delete the last sentence of paragraph 5.21.2.

Reason for revision: The WPS are essential to the welding process; therefore it was recommended that a new section be created. Since it is in the new section 1.3.1.2 there is no need to repeat or duplicate it.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

2408.13, Section 5, Part B, 5.21 General Requirements

Delete the last sentence of Paragraph 5.21.2:
~~The WPS shall be posted at the welder's work station at all times during welding operations.~~

Specification Section Comments:

Final Approved Text: No change from the Specification Section Recommended Language.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

9. Article No.: 2408.16, Camber of Rolled Beam and Plate Girder Spans

The Office of Materials requests a change to Article 2408.16 that will eliminate some duplication in the specifications.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.16 Camber of Rolled Beam and Plate Girder Spans **SS No.:** **Other:**

Change (Redline/Strikeout):

Delete the 8th paragraph.

Reason for revision: This paragraph is already in 2408.13, Section 3. Workmanship

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Delete the 8th paragraph:

~~Camber of main members of continuous or simple span bridges with lines composed of rolled beams, beams and girders, or girders, shall be fabricated so that when the members are assembled in laydown with bearing points accurately positioned as shown on the erection diagram, points on any member shall not vary in the offset position from that indicated in the erection diagram by more than ± 1/2 inch (13 mm).~~

Specification Section Comments:

Final Approved Text: No change from the Specification Section Recommended Language.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

10. Article No.: 2408.14, Annealing Normalizing, and Stress Relieving

The Office of Materials requests several changes to Article 2408.14 that will help our specifications become consistent with current terminology and clarify the intent of the specifications.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.14 Annealing Normalizing, and Stress Relieving **SS No.:** **Other:**

Change (Redline/Strikeout):

Change the title to read:

Stress Relief Heat Treatment

Change the first paragraph to read:

Structural members, which are indicated in the contract documents to be stress relieved, shall have finish machining, boring, and straightening done subsequent to heat treatment. Stress relief heat treatment shall be done in accordance with AWS D1.5 Section 4.4.

Change last paragraph to read:

All members, such as bridge shoes, rockers, pedestals, or other parts, which are built up by welding sections of plates together, shall be stress relieved unless otherwise stated on the plans or specifically waived by the engineer.

Reason for revision: The reason for the first change is because the AWS Code and all other states no longer use the terminology annealing.

The reason for making reference of the AWS D1.5 section 4.4 in lieu of the ASTM A941 is that is a universal specification used by fabricators as well as many other states.

The reason for third change is that there is a need to be specific when “stress relieve” is required for bridge components.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the title:
~~Annealing Normalizing, and Stress Relieving~~ Stress Relief Heat Treatment

Replace the first paragraph:
Structural members which are indicated in the contract documents to be ~~annealed, normalized, or~~ stress relieved, shall have finished machining, boring, and straightening done subsequent to heat treatment. ~~Normalizing and annealing (full annealing) shall be as specified in ASTM A 941. The~~

~~temperatures shall be maintained uniformly throughout the furnace during heating and cooling so that the temperatures at no two points on the member will differ by more than 100°F (38°C) at any one time. If heat treatment is applied for the purpose of stress reduction, it shall be designated as stress relieving.~~ Stress relief heat treatment shall be done in accordance with AWS D1.5 Section 4.4.

Replace the last paragraph:

All ~~M~~embers, such as bridge shoes, pedestals, rockers, or other parts, which are built up by welding sections of plate together, shall be stress relieved ~~as provided in Article 2408.13,~~ when required by the contract documents.

Specification Section Comments:

Final Approved Text:

Replace the title:
~~Annealing Normalizing, and Stress Relieving~~ Stress Relief Heat Treatment

Replace the first paragraph:
Structural members which are indicated in the contract documents to be ~~annealed, normalized, or~~ stress relieved, shall have finished machining, boring, and straightening done subsequent to heat treatment. ~~Normalizing and annealing (full annealing) shall be as specified in ASTM A 941. The temperatures shall be maintained uniformly throughout the furnace during heating and cooling so that the temperatures at no two points on the member will differ by more than 100°F (38°C) at any one time. If heat treatment is applied for the purpose of stress reduction, it shall be designated as stress relieving.~~ Stress relief heat treatment shall be done in accordance with AWS D1.5 Section 4.4.

Replace the last paragraph:
All ~~M~~embers, such as bridge shoes, pedestals, rockers, or other parts, which are built up by welding sections of plate together, shall be stress relieved ~~as provided in Article 2408.13, when required by~~ , unless otherwise state in the contract documents.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

11. Article No.: 2408.17, Bolt Holes

The Office of Materials requests a complete rewrite of Article 2408.17 to address individual requirements in an attempt to eliminate confusion and clarify the requirements such that the specifications are more in line with AWS requirements.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.17 Bolt Holes **SS No.:** **Other:**

Change (Redline/Strikeout):
Replace entire article 2408.17 with the following:

All holes for bolts shall be made by punching or drilling. Holes in all metal thicker than 3/4 inch (19 mm) for carbon steel and 5/8 inch (16 mm) for alloy steel shall not be made by punching, but shall be subdrilled and reamed or shall be drilled full size. Holes in main stress-carrying members shall be subpunched and reamed, subdrilled and reamed, or drilled full size. Holes in other than a main stress-carrying member in metal not thicker than 3/4 inch (19 mm) for carbon steel and 5/8 inch (16 mm) for alloy steel shall be punched or drilled.

When reaming is required all holes shall be either subpunched or subdrilled (subdrilled if thickness limitation governs) 3/16 inch smaller and, after assembling, reamed 1/16 inch larger or drilled full size to 1/16 inch larger than the nominal diameter of the bolts.

A. Punched Holes

The diameter of the die shall not exceed the diameter of the punch by more than 1/16 inch. If any holes must be enlarged to admit the bolts, such holes shall be reamed. Holes must be clean cut without torn or ragged edges. The slightly conical hole that naturally results from punching operations is considered acceptable with the approval of the engineer.

B. Reamed or Drilled Holes

Reamed or drilled holes shall be cylindrical and perpendicular to the member. Where practical, reamers shall be directed by mechanical means. Reaming and drilling shall be done with twist drills, twist reamers or rotobroach cutters. Connecting parts requiring reamed or drilled holes shall be assembled and securely held while being reamed or drilled and shall be match marked before disassembling.

C. Accuracy of Holes

Holes not more than 1/32 inch larger in diameter than the true decimal equivalent of the nominal diameter that may result from a drill or reamer of the nominal diameter are considered acceptable. The width of slotted holes, which are produced by flame cutting or a combination of drilling or punching and flame cutting, shall generally be not more than 1/32 inch greater than the nominal width. The flame cut surface shall be ground smooth.

D. Accuracy Before Reaming

All holes subpunched or subdrilled shall be so accurately punched that after assembling (before any reaming is done) a cylindrical pin 1/8 inch smaller in diameter than the nominal size of the hole may be entered perpendicular to the face of member, without drifting, in at least 75 percent

of the contiguous holes in the same plane. If the requirement is not fulfilled, the badly punch pieces will be rejected. If any hole will not pass a pin 3/16 inch smaller in diameter than the nominal size of the punched hole, this will be cause for rejection.

E. Accuracy After Reaming

When holes are reamed or drilled, 85 percent of the holes in any contiguous group shall, after reaming or drilling show no offset greater than 1/32 inch between adjacent thicknesses of metal.

All steel templates shall have hardened steel bushings in holes accurately dimensioned from the centerlines of the connection as inscribed on the template. The centerlines shall be used in locating accurately the template from the milled or scribed ends of the members.

F. Drilled Holes (No change from original specification, just in numbering)

Drilled holes shall be not more than 1/16 inch (2 mm) greater than the nominal diameter of the bolts. Accuracy of drilled holes shall be the same as specified for subpunched and reamed holes in Paragraph B of this Article. Drilled holes shall be cylindrical and perpendicular to the member.

G. Misplaced Holes (No change from original specification, just in numbering)

Misplaced holes may be a basis for rejection and shall be repaired only with the approval of the engineer.

H. Removal of Burrs (No change from original specification, just in numbering)

Burrs on outside or faying surfaces shall be removed. If required by the engineer, assembled parts shall be taken apart for removal of burrs.

Reason for revision: The entire article was re-written to address individual requirements in an attempt to eliminate confusion and clarify the requirements. In addition this change makes our requirements similar to the AWS requirements.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

2408.17, A, Punched Holes

Replace the entire article:

~~Full size holes shall be not more than 1/16 inch (2 mm) larger than the nominal diameter of the bolt.~~ The diameter of the die shall not exceed the diameter of the punch by more than 1/16 inch (2 mm). If any holes must be enlarged to admit the bolts, such holes shall be reamed. Holes must be clean cut without torn or ragged edges. The slightly conical hole that naturally results from punching operations is considered acceptable with the approval of the Engineer.

~~Punching of holes shall be accurately done so that, after assembling component parts of a member, a cylindrical pin 1/8 inch (3 mm) smaller than the nominal diameter of the punched~~

~~hole may be passed through at least 75% of the holes without reaming. If this requirement is not fulfilled, the incorrectly punched pieces shall be rejected. If any hole will not pass a pin 3/16 inch (5 mm) smaller than the nominal diameter of the hole, this also shall be cause for rejection.~~

~~Where slotted holes are required, the sides of slots shall be truly plane, parallel surfaces. The width of slot shall be not more than 1/16 inch (2 mm) greater than the nominal bolt diameter.~~

2408.17, B, Reamed or Drilled Holes

Replace the entire article:

~~Subpunched and reamed holes for bolts having diameters greater than 3/4 inch (19 mm) shall be punched 3/16 inch (5 mm) smaller than the nominal diameter of the bolt. For bolts having diameters 3/4 inch (19 mm) and less, the holes shall be punched at least 1/16 inch (2 mm) less than the nominal diameter of the bolt. The punch and die shall have the same relative sizes as specified for full sized punched holes.~~

~~After the holes have been punched and parts have been assembled, holes shall be reamed to a diameter not more than 1/16 inch (2 mm) greater than the nominal diameter of the bolts. Holes shall be reamed with twist drills or with short taper reamers. Reamers shall be aligned by mechanical means where this is practicable.~~

~~Reamed holes shall be cylindrical and perpendicular to the member. The accuracy of reamed holes shall be the same as that specified for punched holes except that, after reaming, 85% of the contiguous holes in any surface shall show no offset greater than 1/32 inch (1 mm) between adjacent thicknesses of metal.~~

Reamed or drilled holes shall be cylindrical and perpendicular to the member. Where practical, reamers shall be directed by mechanical means. Reaming and drilling shall be done with twist drills, twist reamers or rotobroach cutters. Connecting parts requiring reamed or drilled holes shall be assembled and securely held while being reamed or drilled and shall be match marked before disassembling.

2408.17, C thru E

Re-letter to F thru H.

2408.17, C, Accuracy of Holes

Add new article:

C. Accuracy of Holes

Holes not more than 1/32 inch (1 mm) larger in diameter than the true decimal equivalent of the nominal diameter that may result from a drill or reamer of the nominal diameter are considered acceptable. The width of slotted holes, which are produced by flame cutting or a combination of drilling or punching and flame cutting, shall generally be not more than 1/32 inch (1 mm) greater than the nominal width. The flame cut surface shall be ground smooth.

2408.17, D, Accuracy Before Reaming

Add new article:

D. Accuracy Before Reaming

All holes subpunched or subdrilled shall be so accurately punched that after assembling (before any reaming is done) a cylindrical pin 1/8 inch (3 mm) smaller in diameter than the nominal size of the hole may be entered perpendicular to the face of member, without drifting, in at least 75% of the contiguous holes in the same plane. If the requirement is not fulfilled,

the badly punch pieces will be rejected. If any hole does not allow a pin 3/16 inch (5 mm) smaller in diameter than the nominal size of the punched hole to pass, it will be rejection.

2408.17, E, Accuracy After Reaming

Add new article:

E. Accuracy After Reaming

When holes are reamed or drilled, 85% of the holes in any contiguous group shall, after reaming or drilling, show no offset greater than 1/32 inch (1 mm) between adjacent thicknesses of metal.

All steel templates shall have hardened steel bushings in holes accurately dimensioned from the centerlines of the connection as inscribed on the template. The centerlines shall be used in locating accurately the template from the milled or scribed ends of the members.

Specification Section Comments:

Final Approved Text: See Deferred note below.

Comments: The reason for the requested changes are AASTHO and ASTM requirements, not AWS requirements as stated above.

Specification Committee Action:

Deferred: X **Not Approved: ☐** **Approved Date** **Effective Date**

The Specification Committee approved this item for the April 15, 2003, General Supplemental Specification with the condition that the Office of Materials made several changes. These changes were to be approved by the Office of Bridges and Structures before submitting to the Specification Section. As of the printing date of these minutes, this issue has not been addressed; therefore, the Specification Engineer has deferred this item.

12. Article No.: 2408.30, A, 1, Non-weathering Structural Steel Applications

The Office of Materials requests a change to Article 2408.30 that will clarify the cleaning requirements prior to painting.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.30, A, 1, Non-weathering Structural Steel Applications **SS No.:** **Other:**

Change (Redline/Strikeout):

Replace the last sentence to read:

All surfaces to be top coated shall be thoroughly clean and dry in accordance with the specification requirements.

Reason for revision: The intent is to have dry and clean surfaces before painting.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the last sentence:
All surfaces to be top coated shall then be thoroughly cleaned ~~with a high pressure water wash~~ and dry in accordance with the specification requirements.

Specification Section Comments:

Final Approved Text:

Replace the last sentence:
All surfaces to be top coated shall ~~then~~ be ~~thoroughly~~ clean~~ed with a high pressure water wash~~ in accordance with the specification requirements and dry.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

13. Article No.: 2408.30, B, 2, Weathering Structural Steel Applications

The Office of Materials requests a change to Article 2408.30, B, 2 that will correct a long standing problem in the specifications.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 2408.30, B, 2 Weathering Structural Steel Applications **SS No.:** **Other:**

Change (Redline/Strikeout):
Change the Fed. Color Standard number (6th sentence) from 30045 (Flat) to 20045 (Semi-gloss).

Reason for revision: The State of Iowa has always used the Fed. Color Standard in semi-gloss and not flat.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace "30045" with "20045" in the sixth sentence of the first paragraph.

Specification Section Comments:

Final Approved Text: No change to the Specification Section Recommended Language.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

14. Article No.: 2528.01, Traffic Control

The Office of Construction requests a change to Article 2528.01 that will clarify the intent of the specification for Category I and II traffic control signs and devices.

Submitted by: Mark Bortle **Office:** Construction **Date:** August 14, 2002

Proposed Effective Date: April 29, 2003 GS

Article No.: 2528.01 **SS No.:** **Other:**

Change (Redline/Strikeout):
Delete all of paragraphs 6 and 7 of Article 2528.01 and replace with the following two paragraphs:

All Category 1 and Category II traffic control signs and devices used on Interstate and Primary highways shall meet National Cooperative Highway Research Program (NCHRP) Report 350. Category 1 devices are defined as low mass, single-piece traffic cones, tubular markers, single-piece drums, and delineators. No lights or signs may be attached to these devices in order for them to meet the Category 1 limitations. Category II devices are defined as vertical panels, Type I, II, and III barricades; and moveable skid mounted sign stands.

It shall be the responsibility of the Contractor to provide FHWA NCHRP 350 approval memos or provide the vendor's self-certification to the Engineer to document crashworthiness of their Category I and II traffic control signs and devices. A list of approved Category II traffic control signs and devices are found on the World Wide Web at the following URL: http://safety.fhwa.dot.gov/fourthlevel/hardware/wzd.htm.

Reason for revision: To improve specification clarity.

County or City Input Needed ☐
County or City Comments:

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the sixth and seventh paragraphs:

All Category ~~1~~I and Category II traffic control signs and devices used on Interstate and Primary Road projects shall meet National Cooperative Highway Research Program (NCHRP) Report 350. Category ~~1~~I devices are defined as low mass, single-piece traffic cones, tubular markers, single-piece drums, and delineators. No lights or signs may be attached to these devices in order for them to meet the Category ~~1~~I limitations. ~~Category 1 devices shall be self-certified by the vendor. It shall be the responsibility of the vendor of the device to determine if their device will meet the evaluation criteria of NCHRP Report 350.~~ Category II devices are defined as vertical panels, Type I, II, and III barricades; and moveable skid mounted sign stands.

~~All Category II traffic control devices purchased for use on Interstate and Primary Road projects, shall meet NCHRP Report 350. Category II devices are defined as vertical panels, Type I, II, and III barricades; and moveable skid mounted sign stands. After January 1, 2002, all Category II traffic control devices used on Interstate and Primary Road projects shall meet NCHRP Report~~

~~350, except Type III barricades with attached signs. Type III barricades with attached signs used on all interstate and Primary Road projects shall meet NCHRP Report 350 by January 1, 2003.~~ It shall be the responsibility of the Contractor to provide FHWA NCHRP 350 approval memos and provide the vendor's self-certification to the Engineer to document crashworthiness of their Category I and II traffic control signs and devices. A list of approved Category II traffic control devices is found on the World Wide Web at the following URL: http://safety.fhwa.dot.gov/fourthlevel/hardware/wzd.htm.

Specification Section Comments:

Final Approved Text:

Replace the sixth and seventh paragraphs:

All Category ~~1~~I and Category II traffic control signs and devices used on Interstate and Primary Road projects shall meet National Cooperative Highway Research Program (NCHRP) Report 350. Category ~~1~~I devices are defined as low mass, single-piece traffic cones, tubular markers, single-piece drums, and delineators. No lights or signs may be attached to these devices in order for them to meet the Category ~~1~~I limitations. ~~Category 1 devices shall be self-certified by the vendor. It shall be the responsibility of the vendor of the device to determine if their device will meet the evaluation criteria of NCHRP Report 350.~~ Category II devices are defined as vertical panels, Type I, II, and III barricades; and moveable skid mounted sign stands.

~~All Category II traffic control devices purchased for use on Interstate and Primary Road projects, shall meet NCHRP Report 350. Category II devices are defined as vertical panels, Type I, II, and III barricades; and moveable skid mounted sign stands. After January 1, 2002, all Category II traffic control devices used on Interstate and Primary Road projects shall meet NCHRP Report 350, except Type III barricades with attached signs. Type III barricades with attached signs used on all interstate and Primary Road projects shall meet NCHRP Report 350 by January 1, 2003.~~ It shall be the responsibility of the Contractor to provide the vendor's self-certification for Category I devices and the FHWA NCHRP 350 approval memos for Category II signs and devices, to the Engineer to document crashworthiness of their Category I and II traffic control signs and devices. A list of approved Category II traffic control devices is found on the World Wide Web at the following URL: http://safety.fhwa.dot.gov/fourthlevel/hardware/wzd.htm.

Comments: The Office of Construction will revise and resubmit to the Specification Section. There will not be any change to the intent of the specification. There is a need for reorganizing the text due to Category II documentation.

Note: the above changes reflect the Office of Construction's revisions from the meeting.

Specification Committee Action:

Deferred: **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

15. Article No.: 4153.06, B, 2, b, High Strength Fasteners

The Office of Materials requests a change to Article 4153.06 that will clarify the intent of the specifications for fasteners.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 4153.06, B, 2, b **SS No.:** **Other:**

Change (Redline/Strikeout):
Replace with the following:

ASTM A 563 Grade DH – Carbon and Alloy Steel Nuts

Reason for revision: The specification for fasteners must be consistent by specifying DH and/or DH3. DH is usually specified for non-weathering and DH3 is usually specified for weathering steel.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace entire article:
ASTM A 563, Grade DH – Carbon and Alloy Steel Nuts.

Specification Section Comments:

Final Approved Text:

Comments: There was confusion of the format of Article 4153.06, and whether this change pertained to weathering or non-weathering steel. The Specification Committee requested that the entire Article be reorganized for clarification.

Specification Committee Action:

Deferred: X **Not Approved:** ☐ **Approved Date** **Effective Date**
Deferred due to confusion in Article 4153.06 and when requirements are needed on Weathering and Non-weathering steel, the Office of Materials will rewrite all of Article 4153.06 and resubmit for a future Specification Committee meeting.

16. Article No.: 4155.02, Formed Steel Beam Guardrail

The Office of Materials requests a change to Article 4155.02 that will clarify which strength of bolts are to be furnished for anchor bolts for guardrail installations.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 4155.02 Formed Steel Beam Guardrail **SS No.:** **Other:**

Change (Redline/Strikeout):

Change the 5th, 6th and 7th sentences to read:

Anchor bolts used to attach beam rail to bridge barrier rail shall meet the requirements of ASTM F1554, Grade 105 and shall be full length galvanized. Nuts shall meet the requirements of ASTM A563 DH, Heavy Hex, Class 2B. Washers shall meet the requirements of ASTM F436. All other bolts, nuts and washers used in the construction of guardrail shall meet the following requirements:

Bolts:	ASTM A307, Grade A
Nuts:	ASTM A563, Grade A, Hex
Washers:	ASTM F844

Galvanizing shall be in accordance with the requirements of ASTM A153, Class C.

Delete the last sentence:

Reason for revision: ASTM A325 is only for high strength bolts and not for anchor bolts. To comply with Road Standard RE-69A. ASTM F-568 M class 4.6 is strictly a metric specification and is not readily available.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the 5th, 6th, and 7th sentences:

Anchor bolts used to attach beam rail to bridge barrier rail shall meet requirements of ~~ASTM A 325. Anchor bolts, nuts, and washers used to attach beam rail to bridge barrier rail shall meet the requirements of AASHTO M 164 /164M, AASHTO M 291/291M, and ASTM F 436/436M, respectively. All other bolts, nuts, and washers used in the construction of guardrail shall meet ASTM F 568M, Class 4.6.~~ ASTM F1554, Grade 105 and shall be full length galvanized. Nuts shall meet the requirements of ASTM A563 DH, Heavy Hex, Class 2B. Washers shall meet the requirements of ASTM F436. All other bolts, nuts and washers used in the construction of guardrail shall meet the appropriate ASTM Specifications as follows: bolts - A 307, Grade A; nuts - A563, Grade A, Hex; and washers - F844

Galvanizing shall be in accordance with the requirements of ASTM A153, Class C.

Specification Section Comments:

Final Approved Text:

Replace the 5th, 6th, and 7th sentences:

Anchor bolts used to attach beam rail to bridge barrier rail shall meet requirements of ~~ASTM A 325. Anchor bolts, nuts, and washers used to attach beam rail to bridge barrier rail shall meet the requirements of AASHTO M 164 /164M, AASHTO M 291/291M, and ASTM F 436/436M, respectively. All other bolts, nuts, and washers used in the construction of guardrail shall meet ASTM F 568M, Class 4.6.~~ ASTM F1554, Grade 105, and shall be full-length galvanized. Washers shall meet the requirements of ASTM F436. Nuts shall meet the requirements of ASTM A 563, DH, and be heavy hex, Class 2B. All other bolts, nuts, and washers shall meet the requirements ASTM A 307, Grade A; ASTM A 563, Grade A, hex; and ASTM F 844; respectively. Galvanizing shall meet the requirements of ASTM A 153, Class C.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

17. Article No.: 4186.03, A, Utilization of Reflective Sheeting

The Office of Construction requests changes to Article 4186.03. The article has been rewritten for clarity.

Submitted by: Mark Bortle **Office:** Construction **Date:** August 14, 2002

Proposed Effective Date: April 29, 2003 GS

Article No.: 4186.03, A, Utilization of Reflective Sheeting **SS No.:** **Other:**

Change (Redline/Strikeout):

Delete all of Article 4186.03.A and replace with the following:

A. Utilization of Reflective Sheeting

1. Permanent Signs and Devices
Unless otherwise specified, all signs with white, yellow, green, red, blue or brown background shall use Type III or IV retroreflective sheeting. The legend on white and yellow signs shall be accomplished with black nonreflective sheeting that is direct applied, or silk screened with black opaque ink. The legend on green signs shall be accomplished with white Type III or IV retroreflective sheeting that is direct applied or with detachable copy. The legend on red signs shall be accomplished using either transparent red ink that is reverse silk screened on white Type III or IV sheeting, or with white type III or IV retroreflective sheeting that is direct applied on a red Type III or IV retroreflective sheeting background. The legend on blue or brown signs shall be accomplished using either transparent ink that is reverse silk screened on white Type III or IV sheeting, with white type III or IV retroreflective sheeting that is direct applied, or with detachable copy.

Type III or IV retroreflective sheeting shall be used for permanent road closure barricades.

2. Work Zone Signs and Devices

a. Interstate and Primary Highways
Unless otherwise specified, all rigid signs with orange backgrounds shall use Type VII (Iowa) retroreflective sheeting. The legend shall be accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink. Unless otherwise specified, all flexible roll-up signs with orange backgrounds shall use Type VI (Iowa) retroreflective sheeting. The legend shall be accomplished by silk screening with black opaque ink.

STOP/SLOW and SLOW/SLOW paddles shall use Type VII (Iowa) retroreflective sheeting. The black legend shall be accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink. The white legend shall be accomplished with transparent red ink that is reverse silk screened on white Type VII (Iowa) retroreflective sheeting.

Type III or IV retroreflective sheeting shall be used for barricades and vertical panels. Reboundable drums, tubular markers, and other reboundable makers shall use Type III or IV retroreflective sheeting that is designed for reboundable devices.

b. Other Highways
Unless otherwise specified, all rigid post mounted signs with orange backgrounds shall use Type III or IV retroreflective sheeting. Unless otherwise specified, all skid mounted signs with orange backgrounds shall use Type I or II retroreflective sheeting. The legend shall be

accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink.

STOP/SLOW and SLOW/SLOW paddles shall use Type I or II retroreflective sheeting. The black legend shall be accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink. The white legend shall be accomplished with transparent red ink that is reverse silk screened on white retroreflective sheeting.

Type III or IV retroreflective sheeting shall be used for barricades and vertical panels. Reboundable drums, tubular markers, and other reboundable makers shall use Type III or IV retroreflective sheeting that is designed for reboundable devices.

At the Contractor's option, work zone signs and devices using retroreflective sheeting per Article 4186.03.2.a above, may be used on all other highways.

Reason for revision: To improve specification clarity

County or City Input Needed ☐
County or City Comments:

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the entire article:

1. Permanent Signs and Devices.
Unless otherwise specified, all signs with white, yellow, green, red, blue, or brown background shall use Type III or IV retroreflective sheeting. The legend on white and yellow signs shall be accomplished with black nonreflective sheeting that is direct applied, or silk screened with black opaque ink. The legend on green signs shall be accomplished with white Type III or IV retroreflective sheeting that is direct applied or with detachable copy. The legend on red signs shall be accomplished using either transparent red ink that is reverse silk screened on white Type III or IV sheeting, or with white type III or IV retroreflective sheeting that is direct applied on a red Type III or IV retroreflective sheeting background. The legend on blue or brown signs shall be accomplished using either transparent ink that is reverse silk screened on white Type III or IV sheeting, with white type III or IV retroreflective sheeting that is direct applied, or with detachable copy.

Type III or IV retroreflective sheeting shall be used for permanent road closure barricades.

2. Work Zone Signs and Devices.

a. Interstate and Primary Highways.
Unless otherwise specified, all rigid signs with orange backgrounds shall use Type VII (Iowa) retroreflective sheeting. The legend shall be accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink. Unless otherwise specified, all flexible roll-up signs with orange backgrounds shall use Type VI (Iowa) retroreflective sheeting. The legend shall be accomplished by silk screening with black opaque ink.

STOP/SLOW and SLOW/SLOW paddles shall use Type VII (Iowa) retroreflective sheeting. The black legend shall be accomplished with black nonreflective sheeting that is direct

applied or silk screened with black opaque ink. The white legend shall be accomplished with transparent red ink that is reverse silk screened on white Type VII (Iowa) retroreflective sheeting.

Type III or IV retroreflective sheeting shall be used for barricades and vertical panels. Reboundable drums, tubular markers, and other reboundable makers shall use Type III or IV retroreflective sheeting that is designed for reboundable devices.

b. Other Highways.
Unless otherwise specified, all rigid post mounted signs with orange backgrounds shall use Type III or IV retroreflective sheeting. Unless otherwise specified, all skid mounted signs with orange backgrounds shall use Type I or II retroreflective sheeting. The legend shall be accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink.

STOP/SLOW and SLOW/SLOW paddles shall use Type I or II retroreflective sheeting. The black legend shall be accomplished with black nonreflective sheeting that is direct applied or silk screened with black opaque ink. The white legend shall be accomplished with transparent red ink that is reverse silk screened on white retroreflective sheeting.

Type III or IV retroreflective sheeting shall be used for barricades and vertical panels. Reboundable drums, tubular markers, and other reboundable makers shall use Type III or IV retroreflective sheeting that is designed for reboundable devices.

At the Contractor's option, work zone signs and devices using retroreflective sheeting in accordance with Article 4186.03, A, 2, a above, may be used on all other highways.

Specification Section Comments:

Final Approved Text: No change for the Specification Section Recommended Language.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

18. Article No.: 4185.02, A, Anchor Bolt and Slip-Base Plate Fasteners for Lighting Poles

The Office of Materials requests a change to article 4185.02 that will require the threads of anchor bolts for light poles to be cut, not rolled.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 4185.02, A. Anchor Bolt and Slip-Base Plate Fasteners for Lighting Poles
SS No.: **Other:**

Change (Redline/Strikeout):
First Sentence: Remove the wording "and have a full-body diameter."

Reason for revision: ASTM F1554 allows the thread to be either cut or rolled and spells out the minimum diameter required. By specifying that anchor bolts shall have a full-body diameter we are requiring the threads to be cut and not rolled.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the first sentence of the second paragraph:

The anchor bolts shall meet the requirements of ASTM F 1554, Grade 105 (724 MPa), and be full-length galvanized~~, and have a full-body diameter~~.

Specification Section Comments:

Final Approved Text: No change to Specification Section Recommended Language.

Comments: Removing the statement "and have a full-body diameter" will allow either cutting or rolling of the bolts.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03

19. Article No.: 4186.10, B, Steel Breakaway Posts for Type B Signs

The Office of Materials requests a change to Article 4186.10 that will improve the consistency of other fastener specifications.

Submitted by: Sam Moussalli **Office:** Materials **Date:** 7/18/02

Proposed Effective Date: 4/03

Article No.: 4186.10, B, Steel Breakaway Posts for Type B Signs **SS No.:** **Other:**

Change (Redline/Strikeout):
Revise the 5th paragraph to read:

Bolts, nuts and washers, including the entire length of anchor bolts shall be galvanized according to ASTM A153, Class D coating.

Reason for revision: The reason for this change is to maintain consistency with all other fastener specifications.

No industry input needed ☐ **Industry notified** ☐ **Industry Concurrence** ☐

Industry Comments:

Specification Section Use Only:

Specification Section Recommended Language:

Replace the fifth paragraph:
Bolts (including the entire length of the anchor bolts), nuts, and washers, shall be galvanized according to ASTM A 153, Class D coating.

Specification Section Comments:

Final Approved Text: No change to Specification Section Recommended Language.

Comments: No comments.

Specification Committee Action:

Deferred: ☐ **Not Approved:** ☐ **Approved Date** 9-5-02 **Effective Date** 4-15-03